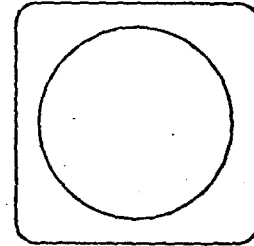


EARTH SATELLITE CORPORATION

(EarthSat)



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2150 SHATTUCK AVENUE, BERKELEY, CALIFORNIA 94704 / (415) 845-5140

August 21, 1973

**E73 10885**

**CR-133523**

Mr. Ryborn Kirby  
Mail Code TF-6  
NASA Johnson Spacecraft Center  
Houston, Texas 77058

Re: NAS9-13286, EREP #510  
EarthSat Project: G-089

Dear Mr. Kirby:

Our sixth monthly progress report is enclosed as per requirements  
of the above referenced contract.

Sincerely,

Dennis R. Jaques  
for  
Charles E. Poulton  
Principal Investigator

DJ:dlv  
Enclosure

cc: V. M. Dauphin, Code TF  
NASA/STIF, Code KS ✓

E73-10885) PLAN FOR THE UNIFORM MAPPING  
OF EARTH RESOURCES AND ENVIRONMENTAL  
COMPLEXES FROM SKYLAB IMAGERY Monthly  
Progress Report, (Earth Satellite Corp.,  
Berkeley, Calif.) 8 p HC \$3.00 CSCL 02D

N73-29236

6  
43/13 Unclass  
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## MONTHLY PLANS AND PROGRESS REPORT

Title: Plan for the Uniform Mapping of Earth Resources and  
Environmental Complexes from Skylab Imagery

Progress  
Report: No. 6

Period  
Covered: 1 July 1973 to 31 July 1973

Contract: NAS9-13286  
EREP Investigation #510

EarthSat  
Project: G-089

### MAJOR ACCOMPLISHMENTS

#### Rice Analog Areas

Louisiana: Two ground and aircraft data collection trips were completed in the month of July. Weather was doubtful for Skylab coverage. However, in order to maintain continuity in the crop development data, it was necessary to gather aircraft and ground data. The procedure was the same as that utilized in the past: medium (1/20,000) and large scale (1/3,000) photography of selected areas, 35mm obliques and aerial observation of the entire area in the study sites, and then ground photography of previously established sites and any new areas picked during aerial observation. This procedure works well because the man who does the ground data collection is in the project aircraft while aerial observations are being made.

The photographic data has been of excellent quality and meets our two objectives, to record the developmental progression of the healthy rice fields and to document the appearances and extent of yield

limiting factors. Once recorded, these types of data will be used as interpreter aids in later phases of this project.

The rice crop itself is doing exceedingly well. Late planting due to heavy rains has been offset by consistent warm weather and sunny periods in July. These conditions have led to good development and a potential high average yield. Generally the rice has headed or is in the boot stage (where the rice panicle has developed but is still enclosed in the stem). It is at this point in time where the more significant yield reducing factors begin to appear in the rice crop. Identification of the pathological factors is being made with the cooperation of Dr. Rush at the Louisiana State University Rice Experiment Station, Crowley, Louisiana. The types of problems which seem to be predominating include the following: root weevils, severe blow down (lodging), various blast diseases (stem blast, rotten neck, etc.), brown spot leaf blight and stem rot. These problems generally are not widespread due to the intensity of the cultural practices, but where they have occurred in cooperators' fields, they are being documented and monitored closely.

Northern California: Due to later planting date California rice has yet to reach the boot stage. One ground data trip was completed in order to talk personally with cooperators and peruse the rice crop. Few problems were observed by EarthSat personnel or mentioned by the farmers contacted. Water weed problems were consistently mentioned; however, it appears this will not greatly affect crop yields. Where observed, the problems were recorded. Data collection procedures are the same as over the Louisiana test sites.

## Natural Vegetation Analog Areas

Both the Sierra-Lahonton and Colorado Plateau test areas were visited during this reporting period. Nearly 100 specific analog areas were documented by ground photos, species composition notes, and phenological notes in each test area. Careful consideration was given to obtain sites which are truly representative of major vegetation types in both areas and still exhibit large overall similarities in plant community composition inter-regionally. It appears (without Skylab imagery in hand) that the following vegetation types will provide inter-regional analog types:

1. Sarcobatus vermiculatus (Hook.) Torr.--Greasewood
2. Sarcobatus vermiculatus (Hook.) Torr./Artemisia tridentata Nutt. Greasewood/Big sagebrush complexes
3. Atriplex nuttallii Wats./Atriplex confertifolia (Torr. & Frem.) Wats.--Saltbush/Shadscale
4. Oryzopsis hymenoides (R. & S.) Ricker--Indian rice-grass
5. Populus spp.--Poplar, cottonwood. P. wicklizenii-P. angustifolia in Colorado and P. fremontii in California-Nevada.
6. Artemisia tridentata Nutt.--Big sagebrush
7. Artemisia arbuscula Nutt.--Low sagebrush
8. Pinyon—juniper woodland
  - a. Pinus edulis Engelm./Juniperus osteosperma (Torr.) Little/Mountain brush (Symphoricarpos, Cercocarpus, Amelanchier, Prunus)--Pinyon-juniper woodland with mountain brush--in Colorado. Pinus monophylla Torr. & Frem./Juniperus osteosperma (Torr.) Little/Mountain brush. Pinyon-juniper woodland with mountain brush in California-Nevada

- b. Pinus edulis Engelm./Juniperus osteosperma (Torr.)/  
Little  
  
Artemisia arbuscula Nutt.--Pinyon-juniper woodland  
with low sagebrush--in Colorado  
  
Pinus monophylla Torr. & Frem./Juniperus osteosperma  
(Torr.) Little/Artemisia arbuscula Nutt.--Pinyon-  
juniper woodland with low sagebrush in California-  
Nevada
9. Yellow pine Forest  
Pinus ponderosa Dougl.--Colorado  
Pinus jeffreyi Grev. & Balf.--California-Nevada
10. Populus tremuloides Michx.--aspens.
11. Pinus contorta Dougl. ex Loud.--lodgepole pine  
P.c. var. murrayana (Grev. & Balf.) Engelm. in  
California-Nevada  
P.c. var. latifolia Engelm.--in Colorado
12. Mixed coniferous forest  
Pseudotsuga menziesii (Mirb.) Franco/Abies concolor  
(Gord. & Glend.) Lindl./Pinus ponderosa Dougl./  
Populus tremuloides Michx.--in Colorado  
  
Pseudotsuga menziesii (Mirb.) Franco/Abies concolor  
(Gord. & Glend.) Lindl./Pinus jeffreyi Grev. & Balf./  
Libocedrus decurrens Torr.--in California-Nevada
13. Salix spp./Alnus spp. riparian vegetation
14. Subalpine meadows--Carex spp./graminaceous species/  
perennial forb vegetation
15. Alpine rocklands--arctic-alpine perennial rosette species/  
graminaceous species/Carex spp. vegetation

These types are expected to yield definitive results when inter- and intra-regional studies are conducted with Skylab imagery.

Vegetation type maps were received of the Colorado Plateau test area from cooperating government personnel. These same persons have agreed to document with notes and photographs ground conditions at the time Skylab III photographs portions of the Colorado Plateau.

## SUMMARY OUTLOOK

With the launch of the Skylab III mission, underflight RB-57 coverage of the test area is being coordinated with EREP personnel. We anticipate the arrival of S190A and S190B imagery of our test sites (except the Louisiana rice site) from the Skylab II mission. S192 tapes will be selected once photographic products have been studied to the point that digital data is necessary for detailed analysis.

## TRAVEL PLANS

Both rice test areas will be visited and the Colorado Plateau test area will be visited to document phenological conditions and locate additional specific natural vegetation analog sites.

## PERSONNEL

No personnel changes have occurred since the last reporting period.

## PROBLEMS

No significant problems have been encountered during this reporting period.

## PLANS FOR NEXT REPORTING PERIOD

Most test sites will be visited as near as is practically possible on the date Skylab III passes over them. Data obtained

by cooperating personnel will be received. Large-scale color and color infrared imagery will be obtained by EarthSat personnel to correspond with the Skylab III overpass.

Skylab II imagery will be interpreted visually and prints or other products necessary for testing and monitoring the natural vegetation types and crop conditions produced. The ability of Skylab imagery to detect major and minor vegetation types and complexes will be evaluated from each sensor package.

# APPENDIX I

## Large Scale Imagery Obtained to Date for all Test Areas

<u>DATE OF COVERAGE</u>	<u>AREA OF COVERAGE</u>	<u>FILM TYPES AND SIZES OBTAINED</u>
3/31/73	Louisiana Coastal Plain	35mm, 70mm color and color IR
5/7/73	No. Great Valley	35mm and 70mm color and color IR
6/3/73	Louisiana Coastal Plain	35mm, 70mm, 9"x9" color and color IR
6/5/73	Colorado Plateau	35mm, 70mm and 9"x9" color and color IR
6/14/73	No. Great Valley	35mm, 70mm and 9"x9" color and color IR
6/15/73	Tahoe-Lahontan	35mm, 70mm and 9"x9" color and color IR
6/29/73	Louisiana Coastal Plain	35mm, 70mm and 9"x9" color and color IR
7/10/73	No. Great Valley	35mm, 70mm and 9"x9" color and color IR
7/11/73	Tahoe-Lahontan	35mm, 70mm and 9"x9" color and color IR
7/12/73	Colorado Plateau	35mm, 70mm and 9"x9" color and color IR
7/28/73	Louisiana Coastal Plain	35mm, 70mm and 9"x9" color and color IR

Additional flights will be made according to planned operations of EREP and aircraft.